Approved for use through 07/31/2006. OMB 0651-0031
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE cond to a collection of information unless it displays a valid OMB control of the contro Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Total Number of Pages in This Submission

Application Number	10/689,130	
Filing Date	October 20, 2003	
First Named Inventor	Erik J. Shahoian, et al.	
Art Unit	Not yet assigned	-
Examiner Name	Not yet assigned	
Attorney Docket Number	IMM151	

ENCLOSURES (check all that apply)					
Fee Transmittal F	om	☐ Drawing(s)		After Allowance Communication to Group	
Fee Attached	l	Licensing-related Papers		Appeal Communication to Board of Appeals and Interferences	
Amendment / Rep	oly	Petition		Appeal Communication to Group (Appeal Notice, Brief, Reply Brief)	
After Final		Petition to Conv Provisional App		Proprietary Information	
Affidavits/dec	elaration(s)	Power of Attorne Change of Corre	ey, Revocation espondence Address	Status Letter	
Extension of Time	e Request	Terminal Disclai	imer	Other Enclosure(s) (please identify below):	
Express Abandon	nment Request	Request for Refund CD, Number of CD(s) 1		PTO/SB/08a Return Postcard	
Information Disclo	osure Statement				
Certified Copy of Document(s)	Priority	Remarks			
Response to Miss			•		
Response to Parts under 3 1.52 or 1.53		·			
	SIGNA	TURE OF APPLICA	ANT, ATTORNEY, O	R AGENT	
John C. Alemanni (Reg. No. 47,384) Firm or Individual name John C. Alemanni (Reg. No. 47,384) Kilpatrick Stockton LLP 1001 West Fourth Street Winston Salem, No. 27101				*	
Signature	Signature				
Date	manc.	18,2004	/		
		OFDIFIOA	TE OF MAILING		

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below.

Typed or printed name Kay Farmer farmer day

This collection of information is required by 3f CFR 1.5. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Erik J. Shahoian, et al.

Ser. No. 10/689,130 Filed October 20, 2003

System and Method for Providing Rotational Haptic Feedback For

Not yet assigned Examiner Art Unit Not yet assigned

Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450

INFORMATION DISCLOSURE STATEMENT

Dear Sir:

Applicant has submitted references listed on the enclosed Information Disclosure Statement in electronic form on the enclosed compact disc. Pursuant to 37 C.F.R. §§1.56, 1.97 and 1.98, the attention of the Patent and Trademark Office is hereby directed to the references listed on the attached Form-PTO SB/08a. If the Examiner desires hard copies of some or all of these references, Applicant will provide these expeditiously upon Examiner's request.

This Information Disclosure Statement is being submitted before the mailing of a first Office Action in this application. The Commissioner is hereby authorized to charge any additional fees under 37 C.F.R. 1.16 or 1.17 which may be required during the entire pendency of this application, or to credit any overpayment, to Deposit Account No. 16-1435. A duplicate of this sheet is attached for that purpose.

It is respectfully requested that the references listed on the attached form be expressly considered by the Examiner and be made of record in the application and appear among the "References Cited" on any patent to issue therefrom. For the documents listed in "Other Documents," Applicant has listed the dates which are shown on the documents. Applicant makes no representation as to the publication dates, if any, of the documents. Further, and although the form supplied by the PTO contains the header of "Other Prior Art," Applicant makes no representation or statement that the references listed are or are not prior art.

Respectfully submitted,

Dated: March 8, 2004

By:

Alemanni (Reg. No. 47,384)

KILPATRICK STOCKTON LLP

1001 West Fourth Street

Winston-Salem, North Carolina 27101-2400

Telephone: (336) 607-7300 Facsimile: (336) 607-7500

utute for form 1449A/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

of 7

Complete if Known				
Application Number	10/689,130			
Filing Date	October 20, 2003			
First Named Inventor	Erik J. Shahoian, et al.	-		
Art Unit	Not yet assigned			
Examiner Name	Not yet assigned			
Attorney Docket Number	IMM151 (51851/293433)			

	τ	<u> </u>	U.S. PATENT D	· · · · · · · · · · · · · · · · · · ·	
Examiner Initials *	Cite No.1	Document Number Number - Kind Code ² (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	1	2,972,140	2/14/1961	Hirsch	T igaros / ppour
	2	3,157,853	11/17/1964	Hirsch	
	3	3,220,121	11/30/1965	Cutler	
	4	3,497,668	2/24/1970	Hirsch	
	5	3,517,446	6/30/1970	Corlyon et al.	
	6	3,623,064	11/23/1970	Kagan	
	7	3,902,687	6/25/1973	Hightower	
	8	3,903,614	9/9/1975	Diamond et al	
	9	3,911,416	10/7/1995	Feder	
	10	4,127,752	11/28/1978	Lowthorp	
	11	4,160,508	7/10/1979	Salsbury	
	12	4,236,325	10/2/1980	Hall et al.	
	13	4,262,549	4/21/1981	Schwellenbach	
	14	4,333,070	6/1/1982	Barnes	
	15	4,464,117	8/7/1984	Forest	
	16	4,484,191	11/20/1984	Vavra	
	17	4,513,235	4/23/1985	Acklam et al.	
	18	4,581,491	4/8/1986	Boothroyd	
	19	4,599,070	7/8/1986	Hladky et al.	
	20	4,708,656	11/24/1987	De Vries et al.	
	21	4,713,007	12/15/1987	Alban	
	22	4,758,165	7/19/1988	Tieman, et al.	
	23	4,772,205	9/20/1988	Chlumsky, et al.	
_	24	4,794,392	12/27/1988	Selinko	
	25	4,885,565	12/5/1989	Embach	
	26	4,891,764	1/2/1990	McIntosh	
	27	4,926,879	5/22/1990	Sevrain, et al.	
	28	4,930,770	6/5/1990	Baker	
	29	4,934,694	6/19/1990	McIntosh	
	30	5,019,761	5/28/1991	Kraft	
	31	5,022,384	6/11/1991	Freels	
	32	5,022,407	6/11/1991	Horch et al.	
	33	5,035,242	7/30/1991	Franklin	
	34	5,038,089	8/6/1991	Szakaly	
	35	5,078,152	1/7/1992	Bond	
	36	5,121,091	6/9/1992	Fujiyama	
	37	5,165,897	11/24/1992	Johnson	
	38	5,175,459	12/29/1992	Danial et al.	
	39	5,186,695	2/16/1993	Mangseth et al.	

PTO/SB/08a (08-03)
Approved for use through 07/31/2006. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

ute for form 1449A/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

of 7 Sheet

Complete if Known				
Application Number	10/689,130			
Filing Date	October 20, 2003			
First Named Inventor	Erik J. Shahoian, et al.			
Art Unit	Not yet assigned			
Examiner Name	Not yet assigned			
Attorney Docket Number	IMM151 (51851/293433)			

40	5,212,473	5/18/1993	Louis	
41	5,240,417	8/31/1993	Smithson et al.	
42	5,271,290	12/21/1993	Fischer	
43	5,275,174	1/4/1994	Cook	
44	5,283,970	2/8/1994	Aigner	
45	5,299,810	4/5/1994	Pierce	
46	5,302,132	4/12/1994	Corder	
47	5,309,140	5/3/1994	Everett, Jr., et al.	
48	5,334,027	8/2/1994	Wherlock	
49	5,389,849	2/14/1995	Asano, et al.	
50	5,436,622	7/25/1995	Gutman et al.	
51	5,437,607	8/1/1995	Taylor	
52	5,461,711	10/24/1995	Wang, et al.	
53	5,466,213	11/14/1995	Hogan	
54	5,547,382	8/20/1996	Yamasaki	
55	5,575,761	11/19/1996	Hajianpour	
56	5,600,777	2/4/1997	Wang, et al.	•
57	5,638,060	6/10/1997	Kataoka, et al.,	
58	5,719,561	2/17/1998	Gonzales	
59	5,736,978	4/7/1998	Hasser, et al.	
60	5,766,016	6/16/1998	SInclair	
61	5,785,630	7/28/1998	Bobick et al.	,
62	5,887,995	3/30/1999	Holehan	
63	5,917,906	6/29/1999	Thronton	
64	5,977,867	11/2/1999	Blouin	
 65	6,008,800	12/28/1999	Pryor	
66	6,067,081	5/23/2000	Hahlganss, et al.	
67	6,081,536	6/27/2000	Gorsuch, et al.	
68	6,111,577	8/29/2000	Zilles et al.	
69	6,118,435	9/12/2000	Fujita et al.	
70	6,140,987	10/31/2000	Stein, et al	
71	6,151,332	11/21/2000	Gorsuch, et al.	
72	6,160,489	12/12/2000	Perry et al.	
73	6,198,206	3/6/2001	Saarmaa et al.	
 74	6,215,778	4/10/2001	Lomp, et al.	·
75	6,218,966	4/17/2001	Goodwin et al.	
76	6,219,034	4/17/2001	Elbing, et al.	
77	6,236,647	5/22/2001	Amalfitano	
78	6,243,080	6/5/2001	Molne	
79	6,262,717	7/17/2001	Donohue, et al.	

stitute for form 1449A/PTO

Sheet

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

of 7

Complete if Known					
Application Number	10/689,130				
Filing Date	October 20, 2003				
First Named Inventor	Erik J. Shahoian, et al.				
Art Unit	Not yet assigned				
Examiner Name	Not yet assigned				
Attorney Docket Number	IMM151 (51851/293433)				

	80	6,307,465	10/23/2001	Kayma et al.	
	81	6,326,901	12/4/2001	Gonzales	
	82	6,337,678	1/8/2002	Fish	
	83	6,373,463	4/16/2002	Beeks	
	84	6,388,655	5/14/2002	Leung	
-	85	6,388,999	5/14/2002	Gorsuch, et al.	
	86	6,414,674	7/2/2002	Kamper, et al.	
 	87	6,422,941	7/23/2002	Thorner et al.	
	88	6,429,846	8/6/2002	Rosenberg, et al.	
	89	6,445,284	9/3/2002	Cruz-Hernandez, et al.	
	90		10/22/2002	White	
<u> </u>	90	6,469,695	11/26/2002		
	92	6,487,421		Hess, et al.	
		6,509,892	1/21/2003	Cooper, et al.	
	93	6,518,958	2/11/2003	Miyajima, et al.	
	94	6,535,201	3/18/2003	Cooper, et al.	···-
ļ	95	6,628,195	9/30/2003	Coudon	
	96	6,636,202	10/21/2003	Ishmael, Jr., et al.	
	97	6,639,582	10/28/2003	Shrader	
ļ	98	6,647,145	11/11/2003	Gay	
	99	20010035854A1	11/1/2001	Rosenberg, et al.	
l	100	20020033795A1	3/21/2002	Shahoian, et al.	
	101	20020149570A1	10/17/2002	Knowles, et al.	
	102	20020156807A1	10/24/2002	Dieberger	
	103	20030006892A1	1/9/2003	Church	
	104	20030016211A1	1/23/2003	Woolley	
ļ	105	20030022701A1	1/30/2003	Gupta	
ļ	106	20030025679A1	2/6/2003	Taylor, et al.	
	107	20030030628A1	2/13/2003	Sato, et al.	
	108	20030038776A1	2/27/2003	Rosenberg, et al.	
	109	20030048260A1	3/13/2003	Matusis	
	110	20030058265A1	3/27/2003	Robinson, et al.	
	111	20030067449A1	4/10/2003	Yoshikawa, et al.	-
	112	20030071795A1	4/17/2003	Baldauf, et al.	
	113	20030095105A1	5/22/2003	Vaananen	
	114	20030128191A1	7/10/2003	Strasser, et al.	
	115	20030128192A1	7/10/2003	van Os	-
	116	20030151597A1	8/14/2003	Roberts, et al.	
	117	20030174121A1	9/18/2003	Poupyrev et al.	
	118	20030179190A1	9/25/2003	Franzen	
	119	2002/0149561 A1	10/17/2002	Fukumoto et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

Complete if Known Application Number 10/689,130 Filing Date October 20, 2003 First Named Inventor Erik J. Shahoian, et al. Art Unit Not yet assigned Examiner Name Not yet assigned

(Use as many sheets as necessary)

ostitute for form 1449A/PTO

IMM151 (51851/293433) Sheet of 7 Attorney Docket Number

	FOREIGN PATENT DOCUMENTS						
Examiner Initials*	Cite No. ¹		Foreign Patent Document code ³ - Number ⁴ - Kind Code ⁵ (<i>if</i>	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	Te
	120	EP	0349086	1/3/1990	Stork Kwant B.V.		
	121	JP	01-003664	7/19/1990	Taito Corporation		
	122	JP	02-109714	1/13/1992	Epoch Co. and Key-Planning Co.		
	123	JP	04-007371	8/3/1993	Taito Corporation		
	124	JP	05-193862	1/27/1995	Sega Corporation		
	125	WO	97/18546 A1	5/22/1997	Gerpheide		
	126	EP	0556999 B1	5/27/1998	NCR International, Inc.		
	127	JP	2001-350592A	12/21/2001	Ryo et al.		
	128	wo	02/12991 A1	2/14/2002	Fukumoto et al.		
	129	EP	1182851 A1	2/27/2002	Becker		
	130	wo	02/27645	4/4/2002	Franzen		
	131	WO	02/31807 A1	4/18/2002	Hwang et al.		
	132	JP	2002-259059A	9/13/2002	Motoyama et al.		

	OTHER DOCUMENTS				
Examiner Initials *	Cite No.1	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.			
	133	ADELSTEIN, "A Virtual Environment System For The Study of Human Arm Tremor," Ph.D. Dissertation, Dept. of Mechanical Engineering, MIT, June 1989.			
	134	ADELSTEIN, "Design and Implementation of a Force Reflecting Manipulandum for Manual Control research," DSC-Vol. 42, Advances in Robotics, Edited by H. Kazerooni, pp. 1-12, 1992.			
	135	AUKSTAKALNIS et al., "Silicon Mirage: The Art and Science of Virtual Reality," ISBN 0-938151-82-7, pp. 129-180, 1992.			
_	136	BAIGRIE, "Electric Control Loading - A Low Cost, High Performance Alternative," Proceedings, pp. 247-254, November 6-8, 1990.			
	137	BEJCZY et al., "Kinesthetic Coupling Between Operator and Remote Manipulator," International Computer Technology Conference, The American Society of Mechanical Engineers, San Francisco, CA, August 12-15, 1980.			
	138	BEJCZY, "Sensors, Controls, and Man-Machine Interface for Advanced Teleoperation," Science, Vol. 208, No. 4450, pp. 1327-1335, 1980.			
	139	BEJCZY, "Generalization of Bilateral Force-Reflecting Control of Manipulators," Proceedings Of Fourth CISM-IFToMM, Sep. 8-12, 1981.			

Substitute for form 1449A/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Complete if Known					
Application Number	10/689,130				
Filing Date	October 20, 2003				
First Named Inventor	Erik J. Shahoian, et al.				
Art Unit	Not yet assigned				
Examiner Name	Not yet assigned				
Attorney Docket Number	IMM151 (51851/293433)				

BEJCZY, et al., "Universal Computer Control System (UCCS) For Space Telerobots," CH2413-3/87/0000/0318501.00 1987 IEEE, 1987.
BEJCZY et al., "A Laboratory Breadboard System For Dual-Arm Teleoperation," SOAR '89 Workshop, JSC, Houston, TX, July 25-27, 1989.
BLISS, "Optical-to-Tactile Image Conversion for the Blind," IEEE Transactions on Man-Machine Systems, Vol. MMS-11, No. 1, March 1970.
BROOKS et al., "Hand Controllers for Teleoperation - A State-of-the-Art Technology Survey and Evaluation," JPL Publication 85-11; NASA-CR-175890; N85-28559, pp. 1-84, 03/1/1985.
BURDEA et al., "Distributed Virtual Force Feedback, Lecture Notes for Workshop on Force Display in Virtual Environments and its Application to Robotic Teleoperation," 1993 IEEE International Conference on Robotics and Automation, pp. 25-44, 05/02/1993.
CADLER, "Design of A Force-Feedback Touch-Introducing Actuator For Teleoperator Robot Control," Bachelor of Science Thesis, MIT, June 23, 1983.
CALDWELL et al., " Enhanced Tactile Feedback (Tele-Taction) Using a Multi-Functional Sensory System," 1050-4729/93, pp. 955-960, 1993.
"Cyberman Technical Specification," Logitech Cyberman SWIFT Supplement, 4/5/1994.
EBERHARDT et al., "OMAR - A Haptic display for speech perception by deaf and deaf-blind individuals," IEEE Virtual Reality Annual International Symposium, Seattle, WA, Sep. 18-22, 1993.
EBERHARDT et al., "Including Dynamic Haptic Perception by The Hand: System Description and Some Results," DSC-Vol. 55-1, Dynamic Systems and Control: Volume 1, ASME 1994.
FOKUMOTO, "Active Click: Tactile Feedback For Touch Panels," ACM CHI2001 Extended Abstracts, pp. 121-122, April 2001.
Force Feedback Touch Panel, Represented by CSC Division, Sales Departmentt., SIXIK Corporation, Tokyo, Japan, www.smk.co.jp.
GOBEL et al., "Tactile Feedback Applied to Computer Mice," International Journal of Human-Computer Interaction, Vol. 7, No. 1, pp. 1-24, 1995.
GOTOW et al., " Controlled Impedance Test Apparatus for Studying Human Interpretation of Kinesthetic Feedback," WA11-11:00, pp. 332-337
HOWE, "A Force-Reflecting Teleoperated Hand System for the Study of Tactile Sensing in Precision Manipulation," Proceedings of the 1992 IEEE International Conference on Robotics and Automation, Nice, France, May 1992.
IBM Technical Disclosure Bullein, "Mouse Ball-Actuating Device With Force and Tactile Feedback," Vol. 32, No. 9B, February 1990.
IWATA, "Pen-based Haptic Virtual Environment," 0-7803-1363-1/93 IEEE, pp 287-292, 1993.

stitute for form 1449A/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet of 7

Complete if Known			
Application Number	10/689,130		
Filing Date	October 20, 2003		
First Named Inventor	Erik J. Shahoian, et al.		
Art Unit	Not yet assigned		
Examiner Name	Not yet assigned		
Attorney Docket Number IMM151 (51851/293433)		フ	

1	157	JACOBSEN et al., "High Performance, Dextrous Telerobotic Manipulator With Force Reflection," Intervention/ROV '91 Conference & Exposition, Hollywood, Florida, May 21-23, 1991.	
1	158	JOHNSON, "Shape-Memory Alloy Tactile Feedback Actuator," Armstrong Aerospace Medical Research Laboratory, AAMRL-TR-90-039, August, 1990.	
1	159	JONES et al., "A perceptual analysis of stiffness," ISSN 0014-4819 Springer International (Springer-Verlag); Experimental Brain Research, Vol. 79, No. 1, pp. 150-156, 1990.	
_ 1	160	KACZMAREK et al., "Tactile Displays," Virtual Environment Technologies.	
1	161	KONTARINIS et al., "Display of High-Frequency Tactile Information to Teleoperators," Telemanipulator Technology and Space Telerobotics, Won S. Kim, Editor, Proc. SPIE Vol. 2057, pp. 40-50, Sep. 7-9, 1993.	
1	162	KONTARINIS et al., "Tactile Display of Vibratory Information in Teleoperation and Virtual Environments," PRESENCE, 4 (4):387-402, 1995.	
1	163	LAKE; "Cyberman from Logitech," GameBytes, 1994.	
1	164	MARCUS, "Touch Feedback in Surgery," Proceedings of Virtual Reality and Medicine The Cutting Edge, Sep. 8-11, 1994.	
1	165	MCAFFEE, "Teleoperator Subsystem/Telerobot Demonsdtrator: Force Reflecting Hand Controller Equipment Manual," JPL D-5172, pp. 1- 50, A1-A36, B1-B5, C1-C36, January 1988.	
1	166	MINSKY, "Computational Haptics: The Sandpaper System for Synthesizing Texture for a Force-Feedback Display," Ph.D. Dissertation, MIT, June 1995.	
1	167	OUH-YOUNG, "Force Display in Molecular Docking," Order No. 9034744, p. 1-369, 1990.	
1	168	OUH-YOUNG, "A Low-Cost Force Feedback Joystick and Its Use in PC Video Games," IEEE Transactions on Consumer Electronics, Vol. 41, No. 3, August 1995.	
1	169	OUHYOUNG et al., "The Development of A Low-Cost Force Feedback Joystick and Its Use in the Virtual Reality Environment," Proceedings of the Third Pacific Conference on Computer Graphics and Applications, Pacific Graphics '95, Seoul, Korea, 21-24 August 1995.	
1	170	PATRICK et al., "Design and Testing of A Non-reactive, Fingertip, Tactile Display for Interaction with Remote Environments," Cooperative Intelligent Robotics in Space, Rui J. deFigueiredo et al., Editor, Proc. SPIE Vol. 1387, pp. 215-222, 1990.	
1	171	PATRICK, "Design, Construction, and Testing of a Fingertip Tactile Display for Interaction with Virtual and Remote Environments," Master of Science Thesis, MIT, Nov. 8, 1990.	
1	172	PIMENTEL et al., "Virtual Reality: through the new looking glass," 2 nd Edition; McGraw-Hill, ISBN 0-07-050167-X, pp. 41-202, 1994.	

PTO/SB/08a (08-03)

Approved for use through 07/31/2006. OMB 0651-0031 U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Complete if Known

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

titute for form 1449A/PTO

Sheet

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

of 7

Application Number	10/689,130		
Filing Date	October 20, 2003		
First Named Inventor	Erik J. Shahoian, et al.		
Art Unit	Not yet assigned		
Examiner Name	Not yet assigned		
Attorney Docket Number	IMM151 (51851/203433)		

173	RABINOWITZ et al., "Multidimensional tactile displays: Identification of vibratory intensity, frequency, and contactor area," Journal of The Acoustical Society of America, Vol. 82, No. 4, Ocotober 1987.	
174	RUSSO, "The Design and Implementation of a Three Degree of Freedom Force Output Joystick," MIT Libraries Archives 08/14/1990, pp. 1-131, May 1990.	
175	RUSSO, "Controlling Dissipative Magnetic Particle Brakes in Force Reflective Devices," DSC-Vol. 42, Advances in Robotics, pp. 63-70, ASME 1992.	
176	Safe Flight Instruments Corporation, "Coaxial Control Shaker," Part No. C-25502, 1 July 1967.	
177	SCANNELL, "Taking a Joystick Ride," Computer Currents, Boston Edition, Vol. 9, No. 11, November 1994.	
178	SHIMOGA, "Finger Force and Touch Feedback Issues in Dexterous Telemanipulation," Proceedings of Fourth Annual Conference on Intelligent Robotic Systems for Space Expploration, Rensselaer Polytechnic Institute, Sep. 30 - Oct. 1, 1992.	
179	SMK Corporation, "Multi-Functional Touch Panel, Force-Feedback Type, Developed: A Touch Panel Providing a Clicking Feeling," http://www.smk.co.jp/whatsnew_e/628csc_e.html, September. 30, 2002.	
180	SMK Corporation, "Force Feedback Type Optical Touch Panel Developed," SMK Corporation Website, October 30, 2002	
181	SNOW et al., "Model-X Force-Reflecting-Hand-Controller," NT Control No. MPO-17851; JPL Case No. 5348, pp. 1-4, 06/15/1989.	
182	STANLEY et al., "Computer Simulation of Interacting Dynamic Mechanical Systems Using Distributed Memory Parallel Processors," DSC-Vol. 42, Advances in Robotics, pp. 55-61, ASME 1992.	
183	TADROS, "Control System Design for a Three Degree of Freedom Virtual Environment Simulator Using Motor/Brake Pair Actuators", MIT Archive © Massachusetts Institute of Technology, pp. 1-88, February 1990.	
184	TERRY et al., "Tactile Feedback In A Computer Mouse," Proceedings of Fouteenth Annual Northeast Bioengineering Conference, University of New Hampshire, March 10-11, 1988.	
185	WIKER, "Teletouch Display Development: Phase 1 Report," Technical Report 1230, Naval Ocean Systems Center, San Diego, April 17, 1989.	

Examiner Signature	Date Conside	ered

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered, Include copy of this form with next communication to applicant. Applicant's unique citation designation number (optional). See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. Enter Office that issued the document, by the two-letter code (WIPO Standard ST. 3). For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. In the indication of the year of the reign of the Emperor must precede the serial number of the patent document. In the indication of the properties symbols as indicated on the document under WIPO Standard ST. 16 if possible. Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450. Do NOT SEND FEES for ROMPLETED FORMS TO THIS ADDRESS. Alexandria, VA 22313-1450. If you need assistance in completing the form, call 1-800-PTO-9199